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ABSTRACT

The Utah State University Protocol Project has developed six self-instructional modules, each concerned with an important concept related to teacher language. Each module contains a student handbook made up primarily of recognition and application practice lessons based on printed classroom transcripts and an 8- to 10-minute protocol film illustrating applications of the concepts in classroom settings. The criterion for success for the project called for 80 percent of the field-test participants to attain at least 80 percent mastery on the three criterion measures included as part of each protocol module. Two field tests were made of each protocol module with revision of the module based on the field-test results. The results on the final field-test indicated that more than 80 percent of the learners had reached the criterion level of mastery on all 18 of the criterion measures employed in evaluating the six protocol modules. (Four tables of data are included.) (Author)

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FIELD TESTING AND EVALUATION IN THE UTAH STATE UNIVERSITY PROTOCOL PROJECT [1]

by

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Introduction

To date, the Utah State University Protocol Project has completed the development and evaluation of six Protocol modules, each dealing with one important concept related to teacher language. For each concept, specific teacher strategies and behaviors were identified to relate the concept to classroom application. For example, one of the concepts was emphasis. The module dealt with ways that the teacher could improve student learning through the use of emphasis. The three specific teacher behaviors covered were voice modulation, paraphrasing and cueing.

Our experience with competency-based teacher education has clearly indicated that helping the teacher master simple skills and apply simple concepts basic to teaching can bring about major changes in teacher performance and classroom climate. Therefore, the USU project emphasized simple classroom applications of these language concepts.

Description of the Module

In completing one of our modules, the learner first reads a description of the concept. This description includes specific teaching behaviors that the teacher can use to apply the concept. A brief review of research literature relating the concept to learner performance is also given. The learner then completes the first Recognition Practice Lesson. This lesson is a typed transcript of a class discussion that was

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recorded in a regular classroom. The learner must identify teacher remarks in the transcript which apply the concept. The student's task is the same for the second Recognition Practice Lesson except that a time limit is imposed. He then views the Protocol Film which shows a teacher applying the concept in a classroom situation and again he is required to identify keyed teacher remarks related to the concept. He then takes a Recognition Test which is designed to measure his recognition of teacher applications of the concept in a classroom situation. The criterion for success on this measure is 80 percent correct. If the student fails to reach criterion, he repeats the practice lessons. After reaching criterion on concept recognition, he completes two Application Practice Lessons and Application Test. These are all based upon classroom transcripts. Certain key teacher remarks are omitted and the student is required to compose teacher remarks that apply the concept and fit the context of the transcribed lesson.

Since it seemed likely that some users would prefer to adopt some of the USU modules but not others, it was decided to make each unit complete and independent so that the modules could be used singly or in any combination with other modules. We also felt that many college faculty members would be more inclined to use the modules if they were self-instructional and could be completed for the most part outside of the regular college class time. Therefore, the modules are individualized and can be completed by the learner entirely during out-of-class time if the instructor wishes to use them in this manner. There are, however, materials within each module which would permit the instructor to use in-class discussion, small work activity groups, simulation, role playing, or demonstrations if he wishes to do so. The Instructor's Guide suggests a variety of activities that can be

used to increase the student's skill in applying the concepts in simulated classroom situations.

The Development Process

The USU development procedure started with planning and building a prototype of each module. This prototype was then tested in one college class in order to collect both summative and formative evaluation data on the module. These data were analyzed and the results were used to revise the module. After revision, the total package of six modules was tested in two Educational Psychology classes, one at Utah State University and one at the University of Colorado. Formative evaluation data were collected during this second field test and were employed in making a final revision of each module. The main purpose of the second field test, however, was to collect summative evaluation data on each module in order to determine whether students completing the modules had reached the criterion level in terms of concept mastery. The USU proposal established a criterion level calling for 80 percent of the learners to achieve 80 percent mastery on all criterion measures.

Preliminary Field Test Results

Throughout the field tests, three criteria were employed for evaluating each module. These were: (1) student's recognition of teacher use of the concept on the Protocol Film, (2) student's recognition of teacher use of the concept in typed transcripts of classroom discussions, and (3) student's application of the concept to typed transcripts of classroom discussion lessons. In order to obtain a large body of formative evaluation data, however, student performance was recorded not only on the three criterion measures, but on all major steps in the learning cycle. In the preliminary field test, there were six points in the modules where fewer than 80 percent of the learners reached cri-

terion level. These are circled in Table 1. The specific errors made at these points were analyzed and corrections and/or additions were made to the material to correct the apparant deficiencies in the materials. All of the failures to reach criterion occurred in the recognition phase of the modules. Most of the student's difficulty with these materials could be traced to examples that were not clear-cut applications of the concept. All in all, the preliminary field test was regarded as successful. The field testing identified a number of deficiencies in the materials and, therefore, contributed substantially to revision. However, the preliminary materials were generally quite effective in that of the 42 points at which student performance was measured, 80 percent or more the learners reached the criterion level of mastery on 36.

Final Field Test

The percentage of learners in the USU and Colorado U final field tests who reached the 80 percent mastery level on each step of the Protocol modules is summarized in Table 2. Data for the USU sample were available at seven points for each module. However, data from the University of Colorado are limited to the three criterion measures. It will be noted that more than 80 percent of the learners reached mastery on all three criterion measures for each of the six modules. Actually, an average of 87 percent of the field test subjects reached criterion on the Protocol Film recognition tests, 98 percent reached criterion on the written Recognition Tests and 95 percent reached criterion on the Application Tests. Therefore, learner performance was substantially above the criterion we had established. Only in Recognition Practice Lesson 1 of the Clarity module did fewer than 80 percent of the learners reach criterion. The performance of learners on this lesson was item-analyzed and the lesson was revised to eliminate ambiguous items.

Student Evaluation of the USU Materials.

In addition to measuring learner performance on each Protocol module a questionnaire was developed to obtain feedback from students on their perceptions of the modules. This questionnaire was administered on two occasions during the field tests, once after the students had completed a single module and again after students had completed all of the modules.

We were particularly interested in obtaining the perceptions of field test subjects regarding the visual and sound quality of the USU Protocol films. Our films were made by recording discussion sessions involving teachers and elementary school pupils. These sessions were initially recorded on two-inch videotape. The videotapes were then edited and the edited tape was converted to 16mm black and white film using the electron beam recording process. Since some visual and auditory loss is brought about both by the editing and transferring to film, our films are not comparable to those produced on film from the beginning. The student responses on visual quality showed that 91 percent of the students considered the films to be of satisfactory visual quality while nine percent indicated that parts of the films were sufficiently poor visually to interfere with learning. Evaluation of sound quality by the field test subjects produced results that were substantially the same with 89 percent indicating that the sound quality was satisfactory while 11 percent reported that there were some pupil remarks that they could not hear.

We were also interested in the students' perceptions of black and white vs. color film. Although earlier research has consistantly shown no difference between the learning outcomes with black and white vs. color film, much of this research was conducted before the widespread

use of color motion pictures and color television. Our results on this question indicated that 95 percent of the subjects responded favorably to the use of black and white film.

Ratings of the Protocol Modules

Students in both the USU and U. of Colorado final field tests were asked to rate the Protocol modules with regard to seven different characteristics. You will note in Table 3 that the results of the ratings were generally favorable although a number of students felt that illustrations should be added to make the materials more attractive. A substantial number of students also felt there was too much repetition in the materials. Our experience with development of Minicourse handbooks at the Far West Laboratory, however, indicated that even though some students complain about repetition, when the repetition is removed a substantial number fail to reach criterion. Since the cost of original illustrations is very high, we avoided the use of illustrations in the handbooks. However, since completing the handbooks, we have located a number of volumes of non-copyrighted illustrations and plan to employ some of these illustrations in the Protocol modules we are currently developing.

Comparisons with Other Education Courses.

Since the number of hours of student time devoted to education courses is relatively small in most states, it seems likely that the adoption of Protocol materials would require abandoning some of the material currently making up the preservice teacher education curriculum. Therefore, we decided to obtain the perceptions of the field test subjects with regard to educational content, relevance to teaching and interest level of the Protocol modules and other educational courses

they had taken. The average student in the field test samples had completed three or four education courses prior to taking the Protocol materials. Results in Table 4 combine data from the USU preliminary field test and from the questionnaries given at the beginning and end of both the USU and the University of Colorado final field tests. It will be noted that 97 percent of the field test sample regarded the Protocol materials to be equal or better in educational content than other education courses they had completed. Field test students also perceived the Protocol materials as more relevant to teaching than other education courses with 98 percent of the responses rating the Protocols as equal or better. With regard to interest level, 88 percent of the field test subjects rated the Protocols to be as or more interesting than other education courses they had taken.

Summary

The Utah State University Protocol Project has developed six self-instructional modules, each concerned with an important concept related to teacher language. Each module contains a student handbook made up primarily of recognition and application practice lessons based on printed classroom transcripts and an eight to ten minute Protocol film illustrating applications of the concepts in classroom settings. The criterion for success for the project called for 80 percent of the field test participants to attain at least 80 percent mastery on the three criterion measures included as part of each Protocol module. Two field tests were made of each Protocol module with revision of the module based on the field test results. The results on the final field test indicated that more than 80 percent of the learners had reached the criterion level of mastery on all 18 of the criterion measures employed in evaluating the six Protocol modules.

In addition to these performance measures, a student questionnaire was administered near the end of the preliminary field test at Utah State University and near the beginning and end of the final field tests at both Utah State and University of Colorado. Student perceptions of the Protocol modules were generally favorable. Students regarded the audio and visual quality of the Protocol films to be satisfactory for the most part. They rated the various elements in the Protocol packages favorably and regarded the Protocol materials to be superior to conventional education courses they had taken in terms of quality of the educational content, relevance, and interest level.

It may be concluded that the USU Protocol modules are effective in bringing about an understanding of certain basic concepts related to teacher language. These materials are also perceived favorable by students. Since the modules are designed for independent learning and can be completed by students entirely during out-of-class time, it appears that these modules can make an important contribution to preservice education without interfering with the ongoing teacher education curriculum.[2]

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[2]The six modules on teacher language are now being used in a number of teacher education programs. They are being marketed on a non-profit basis by Utah State University. The entire package of six modules including Protocol Films, Student Guides, Criterion Tests and Instructor Handbook is available for $120.00. For further information, write to Professor Walter R. Borg, Dept. of Psychology, Utah State University, Logan, Utah, 84321.

TABLE 1

Preliminary Field Test

Percent of Learners Reaching the 80% Mastery Level on Each Step of the USU Protocol Modules

Module	Rec. Prac. 1	Rec.[a] Prac. 2	Rec.[b] Prac. 3	Pro. Film	Rec. Test	Appl. Prac. 1	Appl.[c] Prac. 2	Appl.[d] Prac. 3	Appl. Test
Extension	100	100		82	76	88			82
Encouragement	96	75		71	92	80			100
Clarity	57	93		48	98	96	97		92
Emphasis	82	100		81	100	93	100		80
Feedback	89	86		82	98	100	100		100
Organization	98	100	94	71	100	100	97	100	100

[a] Recognition Practice Lesson 2: This step was optional for Extension and Encouragement; for all following packages it was required.

[b] Recognition Practice Lesson 3: Included in Organization package only.

[c] Application Practice Lesson 2: This step was optional and was completed by fewer students. Students were instructed to complete this step if they did not reach criterion on Application Practice Lesson 1.

[d] Application Practice Lesson 3: Included in Organization package only.

TABLE 2

Final Field Tests

Percent of Learners Reaching the 80% Correct Level on Each Step of the Protocol Modules

Module and Sample	Rec. Prac. 1	Rec. Prac. 2	Rec.[a] Prac. 3	Pro. Film	Rec. Test	Appl. Prac. 1	Appl.[b] Prac. 2	Appl.[c] Prac. 3	Appl. Test
Extension									
Utah State	80	94		89	85	98	97		98
U. of Colo.				81	95				100
Encouragement									
Utah State	100	96		89	100	96	100		91
U. of Colo.				81	100				100
Clarity									
Utah State	78	98		83	100	100	100		100
U. of Colo.				84	100				84
Emphasis									
Utah State	100	100		92	100	100	100		100
U. of Colo.				87	97				97
Feedback									
Utah State	96	97		81	100	100	100		80
U. of Colo.				92	98				100
Organization									
Utah State	96	98	95	100	100	98	97	100	100
U. of Colo.				87	100				100

[a] Recognition Practice Lesson 3: Included in Organization package only.

[b] Application Practice Lesson 2: This step was optional and was completed by fewer students. Students were instructed to complete this step if they did not reach criterion on Application Practice Lesson 1.

[c] Application Practice Lesson 3: Included in Organization package only.

TABLE 3

Rating of the Protocol Modules
Final Field Test, Final Questionnaire

Item	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree
The objectives of the protocol modules were clear:					
Utah State U.	18*	31	2	1	
U. of Colo.	19	16			
The materials were attractive and interesting.					
Utah State U.	8	34	10	3	
U. of Colo.	2	11	11	8	3
The content was well organized.					
Utah State U.	11	32	4	5	
U. of Colo.	16	19			
Important ideas were easily recognized.					
Utah State U.	12	32	5	5	
U. of Colo.	16	17	2		
Repetition of important content was adequate.					
Utah State U.	17	25	3	8	
U. of Colo.	12	16	2	5	2
The materials in the student handbook were easy to use.					
Utah State U.	18	31	1	1	1
U. of Colo.	17	19		1	
Work sheets and visual materials were well-intergrated.					
Utah State U.	14	31	3	2	
U. of Colo.	12	20	2		1

* Number of students making this response. All students did not respond to all questions.

TABLE 4

Learner Perceptions of the Educational Content, Relevance to Teaching, and Interest Level of Protocol Modules as Compared with other Education Courses*

Protocols were percieved as:	Educational Content		Relevance		Interest Level	
	N	%	N	%	N	%
Much better	34	17	60	31	29	15
Better	103	50	89	46	74	39
About equal	62	30	40	21	65	34
Not as good	5	2	2	1	19	10
Much poorer	2	1	2	1	4	2

* Based upon data from preliminary and final field tests.